vomiting had been continuous, and blood was seen on one occasion. His principal complaint was fullness, commencing two hours after meals, accompanied by a dull burning pain in the epigastrium, both of these being relieved by the next meal. He was seen by Dr. E. W. Montgomery before Christmas of 1926, and put on a modified Sippy diet, without relief. A barium series, just before admission, was reported on as follows. "There is a crater ulcer on the lesser curvature with an incisura opposite. Chronic ulcer, producing hour glass stomach."

His gastric analysis was as follows:—

	Free HCl.	*Total Acidity*
Fasting	0	18
1	0	10
2	0	20
3	0	25
4	0	18
5	5	22

He was given belladonna and sodium bicarbonate, with full diet. Three days later he was entirely free from pain, and was discharged soon after. Six months later, Dr. Montgomery told me that there had been no return of pain.

It is an interesting point about these cases that a small dose of belladonna (six minims of the tincture), with a few grains of sodium bicarbonate, taken ten minutes before a meal will give rapid relief. I am not describing a new method of treatment, for I have been using it for twenty-five years, but I am speaking of a treatment which has been overlooked for so long that it is in danger of being forgotten. It has two marked advantages. First, that it frequently cures the patient of a long standing disability; second, that it settles the diagnosis between a functional and an organic condition. If the pain and other symptoms from which the patient suffers are due to ulcer, to cholecystitis, or to a chronic appendicitis, the relic of an acute attack, then there will be no relief. By relief, I mean a very definite and positive report from the patient. I will not accept the statement that he feels better, that the pain is not so bad, etc. He must be able to state positively that all pain and discomfort have left him, and that he can eat articles of food which he formerly feared. Finally, he must give this answer within a week. If he is not free from symptoms within this period, then I consider myself justified in calling for the assistance of the roentgenologist and the pathologist.

I have found the method I have described of the greatest assistance in making a diagnosis.

THE TREATMENT OF HEAD INJURIES

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IN this paper my remarks will be confined almost exclusively to the consideration of acute and recent injuries. Such injuries fall naturally into one or other of the two following broad classes: 1. injuries, including open wounds, confined to the extra-cranial soft tissues of the face, or of the scalp; 2. injuries extending to the bones of the face, to the skull, or to the intra-cranial structures, including the brain.

The first group will be dismissed with little comment, the problems to be dealt with being chiefly those of deformity and of infection.

Open wounds should be thoroughly cleansed, if necessary, scrubbed, under general anæsthesia. Hair should be shaved well beyond any probable line of suture. Injured blood vessels should be ligated, and dead spaces obliterated, so reducing the danger of concealed collections of blood, or serum, subsequent infection, and abscess formation.

Accurate anatomical restoration of soft tissues should be aimed at, and suture performed as early as practicable. This applies particularly to lacerations involving the eyelids and the lips. Where suppuration is to be feared, the insertion of one or more small drains is advisable. Narrow strips of rubber tissue, or a few strands of silkworm gut, are suitable materials for this purpose.

The second group of injuries may be considered under the following three headings: (a) those injuries complicated by fracture of one or more of the bones of the face; (b) fractures of the skull; (c) injuries of the brain.

In dealing with fractures of the bones of the face it might be in order to mention forward dislocation of the mandible, a condition easily recognized by the characteristic deformity, and the inability to approximate the incisor teeth. If seen early, reduction is, as a rule, easily accomplished by the classical method. If reduction

has been delayed, a general anæsthetic may be required on account of swelling and painful muscle spasm..

Fracture of the mandible occurs commonly in the vicinity of the canine tooth, or in the region of the second molar. Bilateral fractures are not uncommon, and should always be looked for. In my opinion, all fractures of the mandible are best treated by using an inter-dental splint. The co-operation of a dentist is desirable. Absolute fixation cannot be secured by bandages alone. I have failed to get satisfactory fixation even with the use of elastic headgear. I have wired together the teeth on each side of a fracture, and have wired upper to lower teeth. Teeth become loose, and fixation is imperfect. I have performed extra-buccal wiring of the ramus with successes, and with failures. In all cases the buccal cavity and the teeth must be kept clean. Normal saline, Dobell's solution, or, a solution of hydrogen peroxide, followed by normal saline, are agreeable mouth-washes.

Fracture of the nasal bones usually implies depression or lateral displacement. It is important to elevate the depressed bone, particularly in young people; otherwise, in addition to unsightly deformity, there is likely to be a deformity of the nasal septum, with subsequent obstruction of the airway. If the displaced bones are replaced before œdema and inflammation occur the swelling tends to hold them in proper position. Intranasal packs of absorbent cotton, dental roll, or gauze, may be employed, but they are uncomfortable. They interfere with respiration, become septic, loosen, and have to be changed. When they are available, intranasal splints of fenestrated rubber, vulcanite, or metal, are to be preferred. When there is not much swelling of the soft tissues, and lateral displacement has to be controlled, a very excellent external splint can be quickly made of dental moulding compound. This material, when placed in hot water for a few minutes becomes as soft as dough, and can be moulded over the nose with ease. It cools rapidly, and becomes quite firm. The nasal passages should be irrigated at least once each day. Normal saline solution is recommended. The rubber bulb syringe is most satisfactory.

In fractures of the superior maxilla involving the alveolus we must always remember that the patient may at some time be obliged to wear a denture. Deformity of the soft tissues, as well as of the alveolar process, must be guarded against. Again it is wise to consult the dentist.

The outer wall of the maxillary antrum may be depressed. There may be a fracture through the infra-orbital foramen, with injury to the infra-orbital nerve. I have seen three such cases. Two became free from symptoms in the course of a year or two without surgical treatment. The third was awarded rather heavy damages in a civil court inside of a year. I have not seen him since. Such an injury is likely to be associated with fracture of the zygoma and deformity of the inferior margin of the orbit. Where gross deformity has been produced and the case is seen early one might possibly succeed in elevating the depressed bone by inserting a finger, or a blunt hook under the anterior end of the zygoma inside the mouth. When pressure on the infra-orbital nerve causes persistent pain, the foramen may be enlarged, or the nerve may be avulsed.

Uncomplicated linear fractures of the vault of the skull, demonstrable only by exploration or by the x-ray, require no surgical treatment. Depression of a portion of the inner table may occur, with or without depression of the outer table. The necessity for removal of a depressed portion of inner table depends upon the signs and symptoms produced by it. These will be discussed later.

In cases of fracture of the base of the skull complicated by laceration of the dura mater, and communicating with the nasal passage, the pharynx, or the auditory canal, the danger of infection is always present, but fortunately serious meningitis does not develop so often as the text-books would lead one to expect. When blood or cerebrospinal fluid has been discovered in the external auditory canal, the canal should be swabbed out with dry sterile cotton, or cotton moistened with alcohol. After cleansing, a light plug of sterile cotton should be inserted. This toilet should be repeated as often as is necessary to keep the auditory canal clean and dry. A syringe should not be used. On the other hand the naso-pharynx may be gently irrigated with warm saline solution or Dobell's solution. The freedom of return flow usually ensures comparative safety.

Of the injuries to the brain may be considered: (1) concussion; (2) contusion; and (3) compression.

Simple concussion of the brain is characterized by a fleeting loss of consciousness, which may or may not be complete, followed by nausea, possibly vomiting, pallor of the face, a weak rapid pulse, headache, and more or less amnesia.

The treatment is rest in the recumbent position. Cold compresses, or an ice cap applied to the head, may be required to relieve headache. A nervous patient may require some sedative. A small dose of alcohol is permissible.

Contusion of the brain may occur at the site of application of external violence. It may also occur at a point immediately opposite to the point of violence, caused by the rebound impact of brain against skull. There may be actual pulping of brain tissue, or, in milder cases, localized subarachnoid hæmorrhage, or œdema.

Where laceration of brain tissue is associated with laceration of the dura mater and indriven fragments of bone or foreign body, surgical intervention is indicated, after the initial shock has passed off. Local anæsthesia may often be employed, but general anæsthesia is permissible. Nitrous oxide gas and oxygen is very satisfactory. After thorough cleansing and trimming of the scalp wound, sufficient bone should be removed to permit of exploration of the damaged area. The bone should not be replaced. The dura mater may be opened by either a crucial or a horse-shoe incision. All parts of the incision in the dura should be at least a quarter of an inch from the margin of the bone. Blood clot, depressed bone fragments, and foreign material should be removed with the greatest gentleness. Where brain tissue is pulped, drainage is advisable, to permit of the extrusion of disintegrated tissue and debris. In cases where there is no compound fracture, and no gross depression of bone, craniotomy is not indicated.

Always examine the mouth and naso-pharynx of a patient who is unconscious. Remove false teeth, etc. I once removed a large mass of chewing tobacco from the mouth of a man who had been unconscious for several hours.

With compression of the brain we may have restless irritability, drowsiness, or prolonged loss of consciousness. The pulse is slow, possibly irregular. As the rate of the pulse decreases the pulse pressure increases. The rise in blood pressure is regarded by some as a compensatory measure not to be interfered with. Respiration may be stertorous, frequently of the Cheyne-Stokes type. The pupils are likely to be contracted, but may be unequal, or both dilated. There will probably be impairment of voluntary control of the bowel and bladder. Catheterization may be necessary. Examinations should be made to exclude all other causes of coma.

In this type of case it is important to know when intracranial hypertension is due to hæmorrhage from the middle meningeal artery. The history of a blow on the head, with or without immediate loss of consciousness of short duration, recovery of consciousness, followed within a couple of hours by the gradual loss of consciousness, usually means serious meningeal hæmorrhage. Active middle meningeal hæmorrhage is a positive indication for immediate craniotomy, ligation of the bleeding vessel, and evacuation of the blood clot.

Unless it is due to middle meningeal hæmorrhage, cerebral compression is not a positive indication for craniotomy. Hence the importance of the history, upon which the diagnosis of such a hæmorrhage must be made. The urge to operate upon the skull of a patient suffering from cerebral compression amounts almost to a superstition. Both doctors and laymen speak of giving the patient "a chance," thereby implying a major surgical operation, which is a further injury to the injured, and which, in my opinion, more often than not lessens his chance of recovery. During the late war, on more than one occasion, I saw head cases brought in apparently moribund and laid aside while the less severely wounded were given "a chance." It was surprising to see how many of these severe cases of cerebral compression recovered, without being given their "chance."

In the presence of cerebral compression due to venous congestion, subarachnoid hæmorrhage, or œdema, subcortical or intra-ventricular hæmorrhage, craniotomy affords little hope of relieving the general intracranial pressure, whereas the risk of hernial protrusion of the brain is great. If the rise in blood-pressure is a compensatory effort on the part of nature, then nature is presuming the skull to be a closed box. Artificial opening of the box is likely to upset the plans of nature and result in hernial protrusion and damage to brain tissue. Spinal puncture is a simpler operation for the relief of general pressure than craniotomy. It is more efficient, less dangerous, and may be repeated. When the patient is sufficiently conscious, free catharsis lowers cerebral pressure.

SUMMARY OF TREATMENT

1. Guard against infection and deformity by thorough cleansing and early suture of wounds.
2. Restore as early, and as perfectly as possible, the contour of the face.
3. Gross depressions of the vault of the skull,

causing local pressure on, or laceration of, the brain should be elevated. In all cases due regard should be paid to the treatment of general shock.

4. Compound fractures of the skull, with penetrating wounds of the brain, should be cleansed early. Gross foreign material, including bone, should be removed, and drainage provided.

5. Reduce intracranial hypertension by free catharsis, and, if necessary, by spinal puncture.

6. The diagnosis of active hæmorrhage from the middle meningeal artery is a positive indication for early operation.

7. Depression of a portion of the inner table of the skull without clinical evidence of local pressure on the brain is not an absolute indication for operation.

8. Clinical signs of general cerebral hypertension do not constitute an absolute indication for craniotomy in the absence of definite signs of removable local pressure.

In short, I would urge conservative, symptomatic treatment.

Observation of ex-soldiers has taught me that of those who received serious wounds of the head comparatively few have developed epilepsy; and of those soldiers who have developed epilepsy comparatively few are men who were seriously wounded about the head.

MENINGITIS SEROSA CIRCUMSCRIPTA

WITH REPORT OF A CASE

BY ALEXANDER GIBSON, F.R.C.S., (ENG.), AND ALVIN T. MATHERS, M.D.,

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THE surgeon who is called upon to deal with disorders of locomotion must develop at least a nodding acquaintance with neurology. Cases of spastic paraplegia are frequently seen by him, the majority of them occurring in children. Most of these are congenital, and are classified eponymously as "Little's Disease." In young adults disseminated sclerosis frequently presents the picture of spastic paraplegia. In later life a spastic ataxia may be manifested at an early stage of pernicious anæmia. Somewhat less common, but capable as a rule of fairly easy recognition, is the group of lesions known collectively as Friedreich's ataxia. As a souvenir of an attack of transverse myelitis, the condition may be seen; as a sequel to an attack of epidemic cerebro-spinal meningitis it is somewhat more rare. Such a case was recently under the care of the writers, and stimulated a search in the literature which resulted in identifying the picture presented with a group described under the name of "Meningitis serosa circumscripta." It may be well to present the history of this patient before discussing the disease.

H. C., male, aged 16, a student, came under the care of Dr. Dawson of Piapot, Sask., on January 9, 1927. The case history, as received from Maple Creek Hospital, is as follows:—

"Sudden onset; pain in head, extreme restlessness, delirium, marked albumen in urine on January 9th; immediately transferred to hospital. On January 11th complained of stiffness and pain in neck and back, retraction. Kernig's sign was present. Lumbar puncture was done, but no fluid could be obtained.

"Transferred to a separate room and treated as an isolated case with special nurses. He was given antimeningococcus serum 20 c.c. intravenously on January 11th. He ran a course of extreme restlessness and delirium for several days. Serum was given again (20 c.c.) on January 13th. After January 16th the symptoms were less acute and the patient was rational at times; there was general improvement until January 23rd, when he seemed to suffer a relapse with recurrence of all symptoms, but more severe than previously. Marked twitching (general), irrational, very drowsy and almost comatose, with very restless intervals until February 3rd, when decided improvement commenced. During all this time the patient was very helpless and from February 3rd on was depressed and very irritable, but gradually improved. He went home on March 9th on a stretcher, still unable to get up. (F. B. Dawson).

"The temperature on admission was 103.8°;